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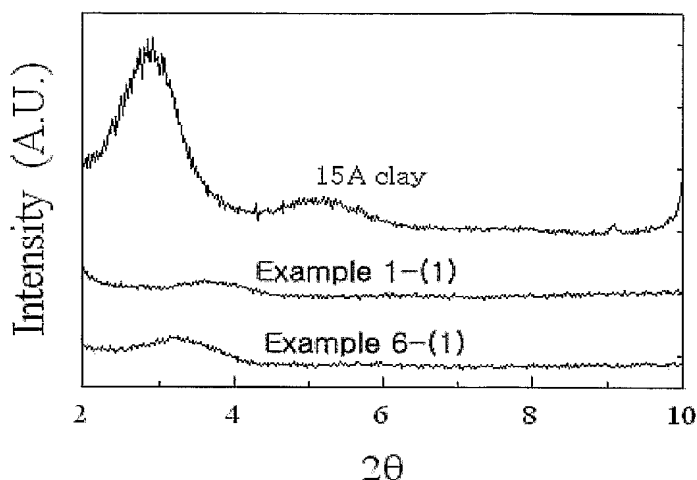
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(54) Title: CLAY-POLYURETHANE NANOCOMPOSITE AND METHOD FOR PREPARING THE SAME



(57) Abstract: Disclosed herein is a clay-polyurethane nanocomposite comprising a clay and a polyurethane covalently bonded to the surface of the clay wherein the polyurethane is formed by reacting a clay-containing diisocyanate compound with a polyol, the clay-containing diisocyanate compound contains a diisocyanate compound covalently bonded to surface silanol groups of the clay and 0.5-5% by weight of the clay based on the diisocyanate compound, and the clay is exfoliated by the polyurethane such that no wide-angle X-ray diffraction (WAXD) peak is detected between 2° and 10° by XRD measurement. The clay-polyurethane nanocomposite has a structure wherein the clay layers are completely exfoliated, rather than a structure wherein the polyurethane is intercalated between the clay layers. Accordingly, the clay-polyurethane nanocomposite has superior physical properties to a pure polyurethane. In addition, the clay-polyurethane nanocomposite can be foamed to prepare a foamed clay-polyurethane nanocomposite, which has superior physical properties, such as mechanical strength and flame retardance, to a common polyurethane foam.



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